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ABSTRACT

Along with the broadening scope of behavioral programs at institutional settings has come the need for training non-professional staff to be competent behavior engineers. The two-fold purpose of this study was to explore the effectiveness of a self-scoring feedback system and two differenct schedules of reinforcement in maintaining daily training sessions conducted by nonprofessional personnel over an extended period of time. The subjects in this experiment were 13 attendants employed at one cottage at a state institution for the mentally retarded. Baselines were taken before and after the implementation of three different reinforcement conditions. Performance of two experiments using the same reinforcement conditions, differentially sequenced, provided information on the effects of a particular sequence. The results of the study indicate that small monetary payments to attendants made contingent upon training residents, produced dramatic increases in the percentage of daily training sessions conducted at the cottages. Results also show that periodic checks and payoffs can be sufficient to maintain high standards of performance. (Author)

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Maintenance of self-help skill training programs with non-professional personnel through incentive systems

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The role of the behavior modification psychologist working within institutional settings seems to be continually expanding as the programs which he develops become more encompassing. Along with the broadening scope of behavioral programs has come the need for training non-professional staff to be competent behavioral engineers. The importance of adequate staff training has been emphasized by Watson, Gardner & Sanders (1971) and Gardner (1972). However, training alone does not insure that behavioral skills will be utilized on the job. A consistent program of reinforcement is needed to maintain usage of these skills (Panyan, Boozer, & Morris 1970). Other experimenters (Watson, et. al. 1971, Pomerleau, Bobrove, & Smith 1972) have also investigated the use of systematic application of reinforcement to maintain attendant performance following training. A variety of reinforcers such as feedback, trading stamps, time off from work, and money have been employed. The feedback system, Panyan, et. al. 1970, is the most economically and administratively feasible. A variation of the feedback system would be to allow the attendants to mark a chart indicating that they have conducted a training session. Some type of recognition such as "Behavioral Engineer" could be awarded for the most sessions conducted in a specified time period.

In most cases reinforcement has been given on a weekly schedule with the exception of Bricker, et. al. 1972 and Martin 1972 who reinforced the aides on a daily basis. Since variable ratio schedules are easy to arrange in an applied setting it would be useful to determine if such schedules maintain performance as well as other schedules reported in the literature to date.

Thus, the two-fold purpose of the present study was to explore the effectiveness of a self-scoring feedback system (peer competition) and two different schedules of money reinforcement in maintaining daily training sessions conducted by non-professional personnel over an extended period of time.

PROCEDURE AND RESULTS

EXPERIMENT I

The purpose of Experiment I was to examine the effects of a particular sequence of reinforcement conditions. The order of treatments were: Baseline I, Peer Competition, Bingo-Money, Behavioral Engineer-Money, and Baseline II.

Subjects

The subjects in the present experiment were 13 attendants (10 females, 3 males) employed on one cottage at a state institution for the mentally retarded. The cottage housed 30 male residents, ranging in chronological age from 8 to 30 years and I.Q. from 10 to 30. The attendants varied in age from 17 to 59 years with a mean of 32 years. Their academic achievement was from the 8th to 12th grade with a mean of 10th grade. Their length of employment with the institution at the onset of the investigation ranged from 0 to 19 months with a mean of 11 months. All of the attendants had completed inservice training which included 16 hours of instruction in behavior modification.

Pre-Experimental Procedure

Each of the residents on the cottage were rated on their level of 10 self-help skills programs by a supervisory level person. The resulting list was used by the attendants in choosing a child for training and

the appropriate self-help skill program. At a cottage meeting, each attendant was given a booklet containing information including a memo from the Cottage-life director requiring them to conduct a 15 minute self-help skill training session each day. The booklet also contained operant programs for teaching self-help skills, data sheets and graph paper.

Instructions to the attendants included use of a tape recorder to record each training session conducted, and emphasized recording of the training data immediately in their booklets. Data that was not recorded on the data sheet in their booklets was not included.

Baseline I

The Baseline I phase consisted of 20 days with no incentive conditions. Baseline began on the day after the attendants received their booklets. The experimenters went to the cottage on an irregular basis and had very limited contact with the attendants, with most of the experimenters' time involved with recording data from each attendant's booklet to determine who had conducted training sessions. The audio tapes were also monitored during this period of time for reliability.

During the Baseline I (Fig. 1.) a mean of 14 percent of the training sessions were conducted. Percentage was figured by the formula: number of training sessions conducted and recorded each day, divided by the number of attendants on duty. Thus, if each attendant conducted more than one training session per day their level could exceed one hundred percent. No limitations were placed on how many residents an attendant trained, as long as the training did not interfere with his regular work duties.

Peer Competition

Peer Competition was defined as public display of number of sessions conducted and number of treatment programs (some attendants worked with more than one resident). A data poster was displayed in the attendant's office on the dorm which listed each attendant's name and provided squares for them to record each training session conducted. One could quickly glance at the data poster and determine which attendant had conducted the most sessions.

The Peer Competition phase was introduced during the fourth week and lasted for a total of six weeks. At the end of each two-week period of time, the attendant who had conducted the most training sessions was labeled "behavioral engineer" and a poster proclaiming the "winner" was prominantly displayed.

When a behavioral engineer was chosen, the data poster was replaced and the two week cycle to determine who would win behavioral engineer began anew.

Peer Competition resulted in a mean of 62.16 percent of training sessions conducted. While there was a substantial increase over the baseline, inspection of Figure 1 revealed an initial high percent of sessions (133% for week 4) with a steady decrease in occurring over the next five weeks to below 50 percent.

Bingo-Money

The Bingo-Money phase, introduced during the 10th week of the study, was scheduled to run until a bingo occurred, or until six weeks had elapsed, whichever occurred first.

The bingo game was conducted as follows: each attendant was given

a bingo card for every resident with whom he was conducting training sessions. The more residents one trained the more bingo cards one could have and thus the more probable a given attendant would win. A bingo poster which displayed the bingo cards for each attendant was placed in the attendant's office. Each time an attendant conducted a training session, he was eligible to draw a bingo number from the pot. When a number was picked which matched a number on his card or cards, the number was crossed out. As few as four numbers crossed out could win a bingo game. The winner of the bingo game won a five dollar cash prize from the experimenters. Thus, the Bingo-Money phase was an intermittent form of money reinforcement for those who won; however, some attendants never won the bingo game and thus were technically under extinction.

Inspection of Figure 1 revealed that the percent of training sessions conducted dropped to baseline and finally to zero. The mean percent of conducting training sessions for the six week bingo phase was 15.14%, only slightly above baseline of 14%.

Behavioral Engineer-Money

During the 16th week of the experiment, the Behavioral Engineer-Money phase was instigated. All the conditions that were employed in the Peer Competition phase were reinstated with the addition that the person who was chosen "Behavioral Engineer" received a five dollar cash prize from the experimenters. This phase was considered to have components of both fixed interval and variable ratio schedules of money reinforcement.

Inspection of Figure 1 revealed a considerable increase in rate

relative to the Bingo phase. The percentage of training sessions conducted increased to above 80% during the 20th week, and fell off to 20% and 30% respectively during weeks 20 and 21. The overall percentage of training sessions conducted during this phase was 51.33%.

Baseline II

During the 22nd week, all experimental conditions were removed. No money was given, and public display of conducting training sessions was discontinued.

The weekly means during Baseline II were 10.85%, 7.% and 21.42% with an overall average of 13.75% which was below all the other conditions including Baseline I.

EXPERIMENT II

The purpose of the present experiment was to examine the effects of presenting the same experimental conditions as employed in Experiment I only in a different order.

In Experiment I it was found that the Bingo-Money condition when introduced while the percent of training sessions was low resulted in extinction. Since Bingo was a VR schedule it seemed possible that such a schedule was too thin to increase or even maintain a low percent of training sessions. Thus, in Experiment II the order of presenting the Bingo-Money and Behavioral Engineer-Money condition was reversed. The resulting order for Experiment II was Baseline I, Peer Competition, Behavioral Engineer-Money, Bingo-Money and Baseline II.

Subjects

The subjects in the present experiment were six female attendants employed on one cottage at a state institution for the mentally retarded.

The cottage housed 36 male residents who ranged in chronological age from 17 to 30 years and varied in I.Q. from 40-45.

The attendants ranged: in age from 21 to 51 years with a mean of 40 years; in educational level from the 8th to 12th grade with a mean of the 10th grade; and in length of employment with the institution from 3 to 33 months with a mean of 25 months. All of the attendants had completed inservice training including 16 hours of behavior modification.

Pre-Experimental Conditions

The Pre-Experimental conditions were identical to those of Experiment I.

Baseline I

Baseline I condition was the same as in Experiment I. During the 20 days of Baseline I a mean of 25% of training sessions conducted was revealed, with a weekly mean ranging from 3% to 47% as illustrated in Figure 2.

Peer Competition

The Peer Competition phase was identical to that described in Experiment I. Peer Competition was instigated during the fourth week of the experiment and lasted for six weeks. This treatment resulted in an overall mean of 100.02% of training sessions conducted. Figure 2 revealed an initial level about equal to baseline, with subsequent increase to a maximum of over 150%. This percent then decreased during weeks 8 and 9 to 127% and 116% respectively.

Behavioral Engineer-Money

The Behavioral Engineer-Money phase was identical to that employed in Experiment I except it was initiated during week 10 immediately following Peer Competition. Inspection of Figure 2 revealed an initial drop in

conducting training session relative to the immediate preceding phase, and only slightly above Baseline I. The percentage increased during this phase from 60% during week 10 to a maximum of 216% during week 12. The performance began to stabilize during weeks 14 and 15 where it reached 175% and 182%. The overall mean percent of conducting training sessions during the Behavioral Engineer-Money phase was 148%.

Bingo-Money

The Bingo-Money phase was defined and conducted as described in Experiment I with the exception that it was instigated during the 16th week, and it lasted only six days, when a "win" occurred, and a reversal was made to Baseline II. The mean daily percent of training sessions conducted during the Bingo-Money phase was: 50%, 175%, 200%, 325%, 325%, and 375%. The overall mean for this phase was 241%. The Bingo-Money phase resulted in an increase over the Behavioral Engineer-Money phase of almost 100%.

Baseline II.

During the 17th week, a return to Baseline Condition identical to Baseline I occurred. All experimental treatments were removed, and public display of the percent of conducting training sessions was removed. A decline from 200% to 0% was observed over an eight week period, with an overall mean of 70% for Baseline II. The overall percent is somewhat above the Baseline I figure of 25%.

Discussion

The results of Experiments I and II indicated that payment of non-professional personnel with small amounts of money made contingent upon training residents produced drastic increases in the percentage of daily

training sessions conducted on the cottages. These results support those reported by Martin (1972) and Pomerleau, et. al. (1972).

While the present experiments were designed to differ only in the order of implimenting the treatments a considerable difference in the percentage of training sessions conducted also occurred between the two studies and confounded any clear order differences. For instance, in Experiment I the percentage during the last few weeks of Peer Competition was stable but fairly low. When the subsequent shift was made to the Bingo-Money phase (VR schedule) the percentage decreased further and ultimately extinguished. Thus, it would seem consistent with the obtained results to conclude that the Bingo schedule of reinforcement in Experiment I was insufficient to maintain even a low rate of responding. Further evidence for the above conclusion was found in Experiment II where the Bingo phase was introduced following a phase which had produced a high level of responding. In Experiment II the Bingo phase increased the level of responding above its preceding condition. This evidence suggests that the VR schedule (Bingo) of reinforcement can be effective for increasing a high rate of responding but not for increasing a low rate of responding.

The Peer Competition phase and the Behavioral Engineer-Money condition produced substantial increases over the Baseline condition in both experiments.

The attendants were conducting the sessions and reporting this information via the chart in every condition except Baseline. The attendants' reports were substantiated by the audio tapes taken during the sessions. This type of self-monitoring behavior is attractive to settings where

professional time is limited. The present experiments required only periodic checks and payoffs to maintain high standards of performance.

Experiment I's results in the various phases were less permanent than those obtained in Experiment II. A stronger or different reinforcer may have had more enduring effects. In the absence of locating such a reinforcer there is the necessity for changing reinforcers when their initial effects decline.

The exploration and evaluation of methods to maintain standards of quality should accompany investigations where output is accelerated. The attendant behavior checklist (Gardner, Drust, Watson 1970), lists relevant dimensions of concern in this regard. However, there has been a paucity of studies investigating these factors in an applied setting with experimental rigor. Also attendant training skills could be reflected in a behavioral index of resident improvement.

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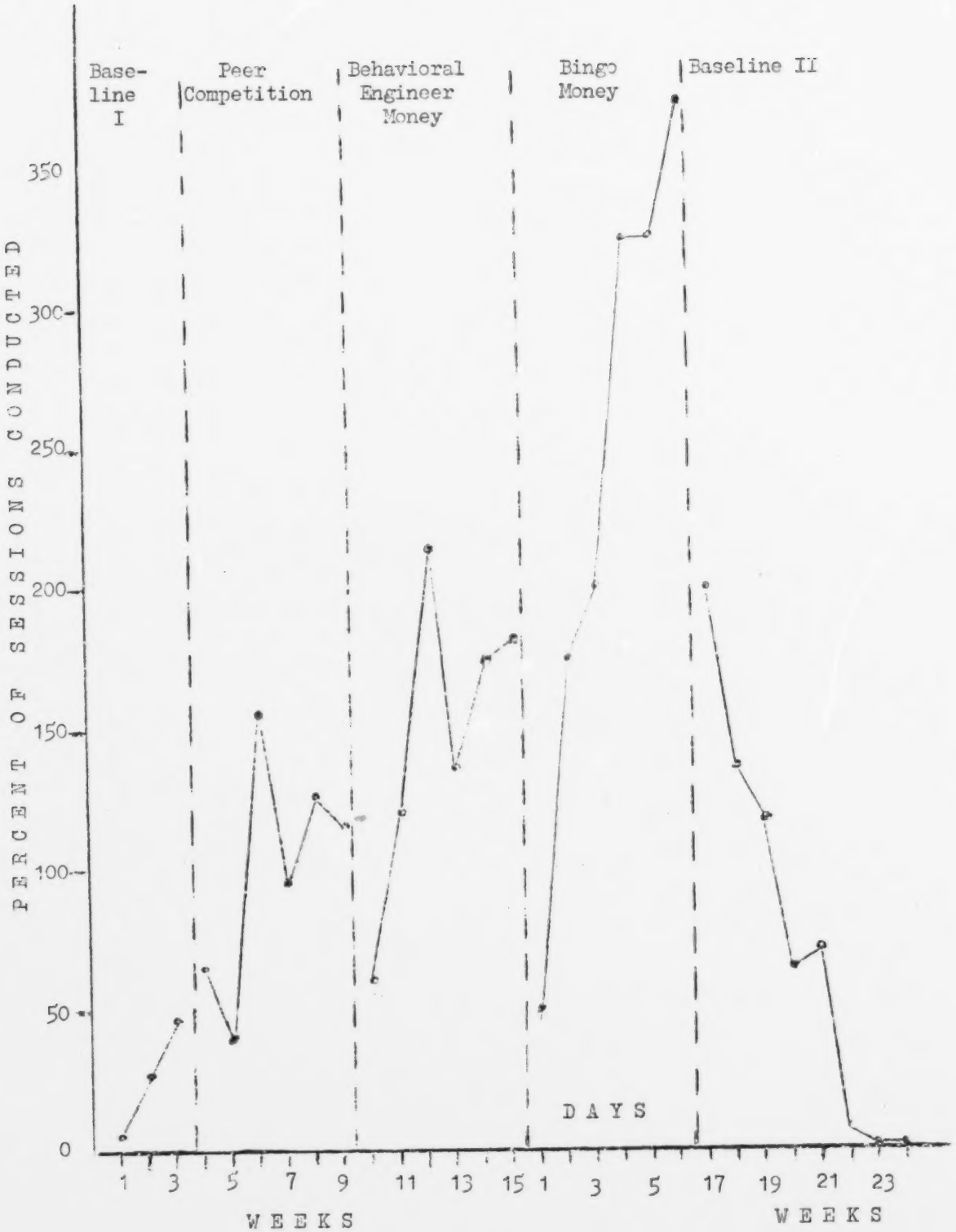
Figure Legends

Fig. 1. Percent of training sessions completed by attendants during the five phases of Experiment I.

Fig. 2. Percent of training sessions completed by attendants during the five phases of Experiment II.


Base-
line
I
Peer
Competition
Behavioral
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Money
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Money
Baseline II
PERCENT OF SESSIONS CONDUCTED
350
300
250
200
150
100
50
0
1
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7
9
11
13
15
1
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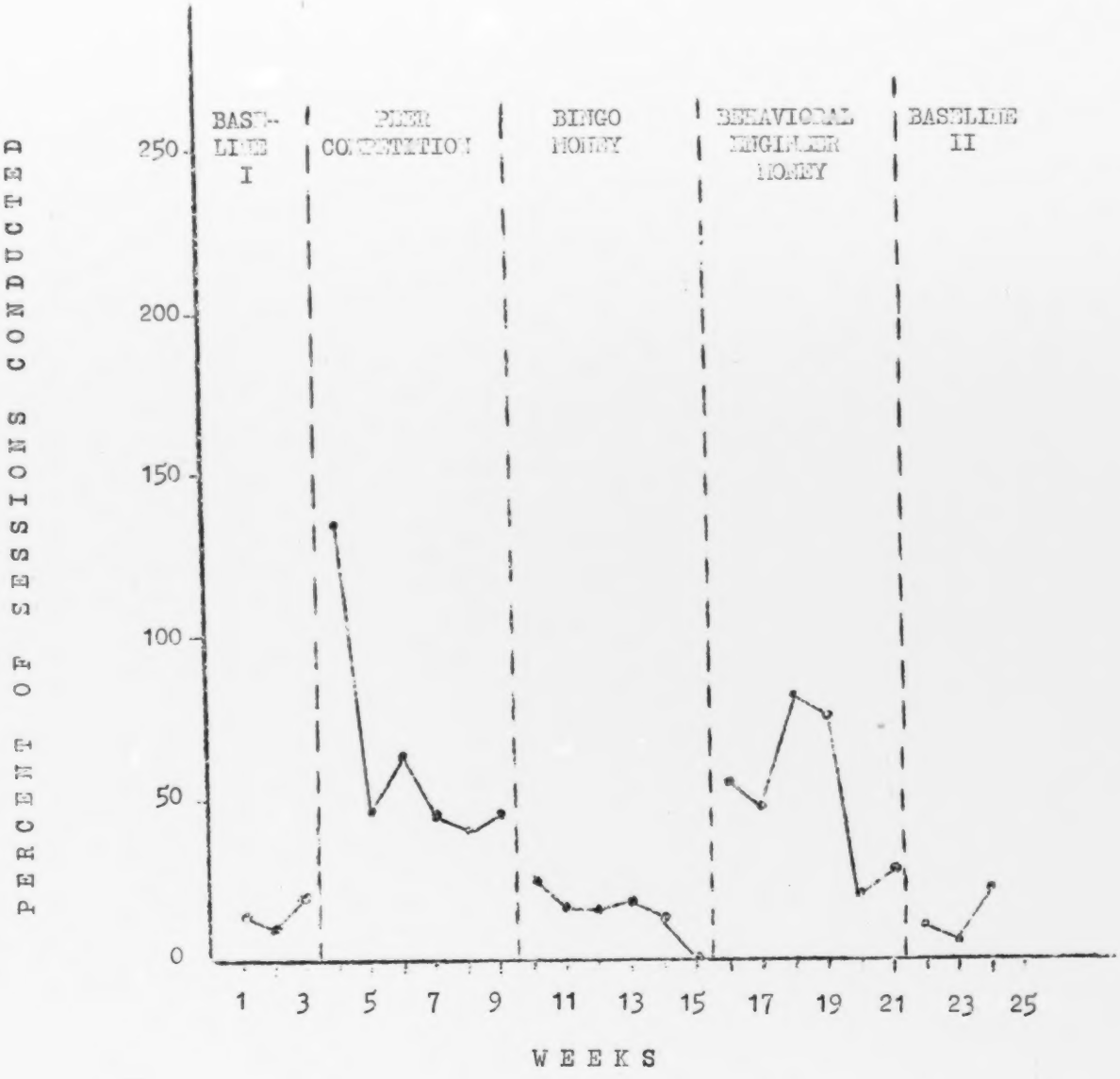
21
23
WEEKS
DAYS
WEEKS


PERCENT OF SESSIONS CONDUCTED
250
200
150
100
50
0
BASE-
LINE
I
PEER
COMPETITION
BINGO
MONEY
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II
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WEEKS